KOREA JOURNAL OF POPULATION AND DEVELOPMENT
Volume 24, Number 1, July 1995

# UNDERSTANDING EDUCATIONAL SEQUENCES AND THEIR CONSEQUENCES ON THE TIMING OF MARRIAGE

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*This study examines educational sequences and their consequences on the timing of marriage using the life history data from the 1983 Korean National Migration Survey. A discrete-time logit analysis is adopted for estimating the impact of educational sequences on marriage timing. I find that the educational process in Korea becomes stabilized and institutionalized during middle and high schooling as middle and high school education becomes a mass experience. However, both men and women are likely to undergo a disorderly sequence during the transition period from high school to college due to the very fierce college entrance examination. Men are also likely to experience a disorderly sequence before or after military service. Both men and women who experience an interruption in their schooling after graduation from high school have lesser odds of getting married than those who keep their educational process orderly.*

## INTRODUCTION

Education has been studied mostly in terms of its significance in explaining other social phenomena such as social inequality (Blau and Duncan 1976) and the timing of marriage and parenthood (Rindfuss, Morgan, and Swicegood 1988). Education as an outcome in sociological studies has been studied by Meyer and his colleagues in relation to mass education, its origin and development (Meyer, Ramirez, and Boli-Bennet 1977; Boli, Ramirez, and Meyer 1985).

From the life course perspective, which emphasizes the importance of the timing and sequences of events, it is a significant question when and how people come to the end of their schooling. The process of schooling at the individual level, however, has been rarely investigated in the life course studies. Recent life course studies on marriage and fertility in the United States have dealt with the sequences of life events until marriage or parenthood and their consequences on the timing of marriage or

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parenthood (Hogan 1978a, 1981; Marini 1984b; Rindfuss, Swicegood and Rosenfeld 1987).

The process of schooling was not separately investigated in those studies. The process of schooling as a part of the life course of men and women is conditioned by internal and external factors. At the individual level, the process of schooling may vary on the one hand by individual characteristics and background such as urban-rural residence and the family background. Military service for men in Korea is especially likely to generate disorderly sequences of life events until the last year of final education even though the effect of military service is usually confined to tertiary education. On the other hand, it is well established that the life courses of men and women are shaped in social and historical contexts (Elder 1974). War, economic depression, and rapid social changes are among the significant external factors affecting life courses. In terms of external factors, the effect of severe hardship under Japanese colonial rule (1910-1945) and the Korean War (1950-1953) on the process of schooling in Korea is widely considered to have been tremendous.

This paper investigates the process of schooling in Korea. We will come to understand how men and women of different levels of educational attainment have experienced and organized educational sequences in a society where social change has occurred widely and swiftly. I also examine when people experience a discontinuity in their education and why they do so in relation to the unique situations in Korea. Lastly, I investigate the consequence of educational sequences on the timing of marriage.

## DATA AND METHODS

### *Data*

Data for this study come from the 1983 Korean National Migration Survey (hereafter KNMS). This survey aimed to identify the factors affecting migration behaviors. At the individual level, this survey gathered rich information regarding the life courses of respondents. KNMS asked respondents for their life histories from age 14. The raw data in KNMS have the records of the year of the occurrence of, the entry into, and the exit from an activity status such as schooling, military service, employment, marriage and birth of children.[1]

This paper consists of two parts: a sequence analysis and a multivariate

[1]For a more precise explanation regarding the 1983 Korean National Migration Survey data, see Eun (1994) and Kim (1993).

**TABLE 1.** DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS IN EDUDAT AND EDULIFE (%)

| | EDUDAT | | EDULIFE | |
|---|---|---|---|---|
| Sex | | | | |
| Male | 3276.93 | (56.3) | 3227.69 | (56.1) |
| Female | 2543.56 | (43.7) | 2530.83 | (43.9) |
| Age in 1983 | | | | |
| - 19 | 1651.94 | (28.4) | 1641.85 | (28.5) |
| 20 - 29 | 2101.27 | (36.1) | 2089.48 | (36.3) |
| 30 - 39 | 1211.19 | (20.8) | 1201.53 | (20.9) |
| 40 - 49 | 598.92 | (10.3) | 579.89 | (10.1) |
| 50 - 59 | 218.92 | ( 3.8) | 208.72 | ( 3.6) |
| 60 | 38.25 | ( 0.7) | 37.05 | ( 0.6) |
| Final Educ. | | | | |
| Middle | 2019.34 | (34.7) | 1997.49 | (34.7) |
| High | 2778.29 | (47.7) | 2752.86 | (47.8) |
| College | 1022.86 | (17.6) | 1008.17 | (17.5) |
| Marital Status | | | | |
| Single | 5762.55 | (99.0) | 5721.07 | (99.3) |
| Married | 57.94 | ( 1.0) | 37.45 | ( 0.7) |

Note: 1. EDUDAT is the data used for the frequency analysis of orderly/disorderly sequences of life events. This data exclude from the 1983 KNMS data the cases in which final educational attainment is no schooling or elementary education.

2. EDULIFE is the data used for the calculation of the conditional probability and the proportion of orderly sequences. This data exclude from EDUDAT the cases in which the activity status at age 14 was not student.

analysis on the consequence of educational sequences on the timing of marriage. Sequence analyses also consist of two parts.[2] One is the frequency analysis of orderly and disorderly sequences. The other is the analysis of the conditional probability of the disorderly sequence of life events until the last year of schooling. For the frequency analysis of orderly and disorderly sequences of life events until the last year of schooling, I observe activity states until the last year of final education. The data used for this purpose is called EDUDAT, which are truncated in the last year of schooling. For students of any level at the time the survey was taken, the current schooling in 1983 is assumed as the final education.[3] Therefore, EDUDAT consists of

[2]Those who were never students past age 14 and onward or whose final educational attainment was no schooling or elementary schooling are omitted from a sequence analysis. Six males and eighteen females were age 14, single, and elementary school students in 1983. Only one male married at age 14 was an elementary student in 1934.

[3]A discussion of the suitability of this assumption follows in the next section.

people who actually completed their schooling and those who were enrolled at any level of school at the time the survey was taken.

For the analysis of the conditional probability of disorderly sequences, I modify the EDUDAT. Because I am concerned with the beginning of disorderly sequences of life events during schooling, I truncate the data when a disorderly sequence begins. The data used for the survival analysis are called EDULIFE. Demographic characteristics of respondents in EDUDAT and EDULIFE are shown in Table 1.

For the event history analysis on the effect of the educational sequence on marriage timing, I also modify the raw data of KNMS. Because I am concerned with the timing of marriage, I truncate the data when a person marries or is age 35 in the case of being single at the time the survey was taken.

*Methods*

For descriptive purposes, I depend on frequency analysis of orderly and disorderly sequences controlling for sex, birth cohort, and educational level. I examine the various educational sequences people have experienced. To capture the diversity of educational sequences, I calculate the number of sequences per capita. In this paper, the number of sequences per capita is the mean of sequences in each category of birth cohorts or educational levels. The mean of sequences (hereafter MS) is calculated as follows:

$$\text{MS} = (\text{Number of Actual Sequences}) / (\text{Number of Population in Each Category})$$

I am also concerned with the timing of a disorderly sequence until the last episode of schooling. In order to examine the beginning of a disorderly sequence, I use the life table method. I calculate the conditional probability of the occurrence of a disorderly sequence by sex and age. I also calculate the survivor function of an orderly educational sequence.

In order to estimate the effects of the educational sequence on the timing of marriage, I adopt an event history analysis. The concrete form of discrete-time method in this research is a discrete-time logit analysis. Before discussing the model of a discrete-time logit analysis, I briefly discuss the hazard rate because an event history method models the hazard rate. The hazard rate, $h(t)$, is the instantaneous risk of having an event at time $t$, given that the event has not already occurred. Let $T$ be an integer-valued random variable which gives the timing of event occurrence. Then the hazard rate at time $t$ is

$$h(t) = \lim_{\Delta t \to 0} \frac{P(t + \Delta t > T \geq t | T \geq t)}{t} \quad (1)$$

where $P(t+\Delta t > T \geq t \mid T \geq t)$ indicates a conditional probability, namely the probability of an event occurrence, given that the event did not occur before time t. If we remove the condition $T \geq t$ from $P(t+t > T \geq t \mid T \geq t)$, the probability, $P(t+t > T \geq t)$ becomes the probability density function of $T$, $f(t)$. Probability density function is defined as follows:

$$f(t) = \lim_{\Delta t \to 0} \frac{P(t + \Delta t > T \geq t)}{t} = h(t)\exp[-\int_0^t h(u)du] \quad (2)$$

Survivor function, $S(t)$, is the probability that an event still does not happen at time $t$. $S(t)$ is defined as follows:

$$S(t) = P(T \geq t) = \exp[-\int_0^t h(u)du] \quad (3)$$

Therefore, the hazard rate can be indicated by the use of $f(t)$ and $S(t)$ as follows:

$$h(t) = \frac{f(t)}{S(t)} \quad (4)$$

Now, we begin to define the model of a discrete-time logit analysis which is based on the definition of the hazard rate above. Let $T$ be a discrete random variable which indicates the time of an event. $T$ can have any integer value such as 1, 2, 3, .... If $T = 1$, it means that an event occurred at time 1. Probability of an event occurrence at time $t$, $f(t)$, is defined as follows:

$$f(t_i) = P(T = t_i) \quad (5)$$

where $t_i$ notes the $i$th discrete time point. The discrete-time hazard rate at time $i$, $h(t_i)$, which is a conditional probability of an event occurrence at time $t$, is defined as follows:

$$h(t_i) = P(T = t_i | T \geq t_i) \quad (6)$$

If we define the survivor function as $S(t_i)$, we can indicate $h(t_i)$ with $f(t_i)$ and $S(t_i)$ as we did at the general definition of the hazard rate above.

$$h(t_i) = \frac{f(t_i)}{S(t_i)} \quad (7)$$

In a discrete-time logit model, we model the odds for conditional probability of an event occurrence at time $t$, given that the event did not occur before time $t$. Odds are defined here as the ratio of two probabilities when the states are mutually exclusive, so if we have a probability $P(t_i)$, odds become $P(t_i)/(1\text{-}P(t_i))$. Logit is just the log-odds of $P(t_i)$, $\ln(P(t_i)/(1\text{-}P(t_i)))$. Therefore, the discrete-time logit model in this study is defined as follows:

$$\ln(P(t_i)/(1-P(t_i))) = a_i + b_{ji}X_j + c_{ki}X_k \quad (8)$$

where $i$ indicates the time of an event occurrence, $b_{ji}$ is the set of parameter estimates of time-independent variables, $c_{ki}$ is the set of parameter estimates of time-varying variables, $X_j$ is the set of time-independent variables, and $X_k$ is the set of time-varying variables.

## DEFINITION OF THE LAST SCHOOLING[4]

It is very hard to define one's last schooling at any particular point because schooling can recur anytime during one's life. I define the last schooling for this research as follows: first, the last schooling for those ever married at the point of survey, and those who remained single until age 35 is defined as the educational level in the year of marriage and of that obtained by age 35, respectively. Second, the last schooling for students in 1983 is defined as the current educational level of the year 1983.

This definition of the last schooling is sure to be controversial when applied to the countries where the return to school from employment is frequent. However, this definition seems to be acceptable when applied to Korea. In order to examine the reliability of this definition, I compared the educational attainment of respondents from the 1983 KNMS raw data with that from the data truncated in the year of marriage or at age 35 in the case of remaining single. Table 2 shows that final educational attainment between the two data is nearly the same. The difference of educational attainment between the two data can be attributed to those who continued schooling after marriage or after age 35. The negligible difference of educational attainment between the two data means that there were very few who continued schooling after marriage or age 35 in Korea. Only 45 men, 1.2 percent of the male respondents, and 19 women, 0.4 percent of the female respondents, married when they were students. Therefore, it is not

[4]"The last schooling" is used interchangeably with the terms, "the final schooling" or "the last year of schooling" in this paper.

TABLE 2. THE COMPARISON OF EDUCATIONAL ATTAINMENT BETWEEN THE 1983 KNMS RAW DATA AND THE DATA TRUNCATED IN THE YEAR OF MARRIAGE.

(%)

| Educational Attainment | 1983 KNMS Raw Data | | Data Truncated[1] | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| No Schooling | 134 ( 3.67) | 465 ( 9.19) | 135 ( 3.70) | 466 ( 9.21) |
| Elementary | 574 (15.74) | 1316 (26.00) | 574 (15.74) | 1317 (26.02) |
| Middle | 830 (22.76) | 1316 (26.00) | 831 (22.79) | 1317 (26.02) |
| High | 1363 (37.37) | 1482 (29.28) | 1372 (37.62) | 1487 (29.38) |
| College or More | 740 (20.29) | 461 ( 9.11) | 729 (19.99) | 453 ( 8.95) |
| Unknown | 6 ( 0.16) | 21 ( 0.41) | 6 ( 0.16) | 21 ( 0.41) |
| Total | 3647 (99.99) | 5061 (99.99) | 3647 (100.0) | 5061 (99.99) |

Note. 1. The 1983 KNMS data were truncated in the year of marriage or at age 35 in the case of remaining single.

problematic to assume that most people in Korea finish their education before marriage.

The definition of the last schooling for those were students when the survey was taken can be somewhat problematic. 699 men, 19.2 percent of male respondents, and 563 women, 11.1 percent of female respondents were still unmarried students at the point of survey. It is obvious that these students did not complete their schooling in 1983. I include students in 1983 in this study rather than omitting them from the analysis, particularly for the event history analysis.

## DEFINITION OF ORDERLY/DISORDERLY SEQUENCES OF LIFE EVENTS UNTIL THE LAST SCHOOLING

There is no definite principle on how a person should follow the path leading to the last schooling. There is also no upper limit of the extent of education one achieves during an individual's lifetime. However, the completion of schooling before marriage is included in social norms of the transition to adulthood in Korea (Eun 1994). This is supported by the fact that only a negligible proportion of men and women were married when or after they were students in the KNMS data[5] In many settings, it is well

[5]Marini (1984a, p. 232) strongly questions the reliability of the concept of a normative model in which a norm is usually assumed to exist not by empirical evidence but by providing a regularity in behavior, represented by a statistical average. Hogan and Astone (1986) partially agree with Marini's assertion. However, Hogan and Astone advocate the use of the normative model, especially in comparative, historical and crosscultural studies by arguing that

recognized that work and marriage usually come after completing schooling (Blossfeld and Huinink 1991).[6]

Activity states used to discern orderly/disorderly sequences of the process of schooling in this paper consist of student (**S**), employment (**E**), unempolyment (**U**), other (**O**), military service (**M**) only for men, and homemaker (**H**) only for women.[7] An orderly sequence of the schooling process is defined as the continuance of schooling without any interruption except the interruption by military service for men. For men, military service has been conscriptive since 1949 in Korea (Kim 1989, p. 52). Most men are subject to conscription when they reach 20 years of age. When men reach 20, they usually finish their high school education and pursue a college education or enter the labor market. College men can postpone their military service until after graduation from college. Therefore, the orderly sequence of the schooling process is defined as the continuation of student status for men and women, and with interruption only by military service for men.[8] Other sequences including interruptions by employment, unemployment, homemaker, and other are regarded as disorderly sequences in the process of schooling.[9]

An orderly sequence of schooling for men is a continuance of the student status, for instance, **SSSS** or the interruption by military service during schooling, for instance, **SSSSMMMMS**. An orderly sequence for women is only one type: a continuance of student status, for instance, **SSSSSS**. In this

"expected forms of behaviors, and the institutional arrangements to deal with them, provide radically different contexts for life-course development, particularly youth-to-adult transitions" (Hogan and Astone 1986, p. 118). In addition, the norm can be interpreted as "cognitive guidance system, rules of procedure that actors employ flexibly and reflexively to assure themselves and those around them that their behavior is reasonable" (DiMaggio and Powell 1991, p. 21). I assume the existence of the norm on the one hand in the meaning of DiMaggio and Powell (1991), and on the other hand, indirectly by providing the statistical regularity in this study.

[6]In previous studies on the sequences of life events in the United States, many studies assume that there is a normative sequence of life events: education, work, and marriage (Hogan 1978b; Rindfuss et al. 1987).

[7]The "other" category includes retirement and disability. This category is sure to include those who failed in the entrance exam to schools, and prepared for the entrance exam for the next year at private academies (hakwon).

[8]Even though one's education ends as drop-out, I consider the sequence of life events until the last schooling as orderly if there is no other activity status until the last year of schooling.

[9]If a person was described as being in the "other" category when he or she was in a private academy preparing for the next year's entrance exam to schools, his or her sequences of life events in the process of schooling would not deviate from an orderly sequence because it is socially accepted as normal to remain at private academy preparing for the next entrance exam. However, there is no way to determine the substantial content of the "other" category.

analysis, I am not concerned with the duration of the same activity status in determining the orderly/disorderly sequences in the process of schooling. Therefore, a continuance of student status for five years, **SSSSS**, is regarded as the same as a continuance of student status for two years, **SS** or for three years, **SSS**.

## SEQUENCES OF LIFE EVENTS UNTIL THE LAST SCHOOLING

People follow various paths until they finish their final schooling. It is difficult for all people to pursue their education until the last schooling without any interruption. At times, they can be out of school to serve in the military. Sometimes, they cannot keep their schooling because of a lack of economic resources. Some people may recess from school. There can be many factors which hinder people from following the "normative educational process" to the final schooling. The longer the duration of schooling, the greater the likelihood of experiencing disorderly sequences of life events until the last schooling.

My interest in this section is how Korean people managed their educational process. I begin the analysis of the sequences of life events by examining the mean of actual sequences (MS).

### *Analysis of the Mean of Actual Sequences*

Educational attainment in Korea has increased after the liberation from Japanese colonial rule (Eun 1994; Jeong 1992). In addition, it is remarkable that the process of schooling in terms of actual sequences of life events until the last schooling has been stabilized. Table 3 presents the changing patterns of the mean of actual sequences of life events until the last schooling.

I analyze the mean of actual sequences of life events (MS) until the last schooling by educational level because people are likely to experience disorderly sequences of life events during transition periods (for instance, from middle to high school, or from high school to college). Regardless of sex, the most conspicuous feature of the process of schooling for graduates of middle and high school is the stabilization of the number of actual sequences of life events cohort after cohort. The MS has been stabilized at a lower level during middle and high school education cohort after cohort. This can be interpreted as demonstrating that during middle and high school years, people became more likely to continue their schooling without interruption, and/or people experienced less interruptions during the transition period from middle to high school.

However, a relatively high MS is observed for people of college education

TABLE 3. MEAN OF ACTUAL SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING BY BIRTH COHORT AND FINAL EDUCATIONAL ATTAINMENT

| Sex | Final Education | Mean of Actual Seq. (MS) | Birth Cohort 1930 | 1940 | 1950 | 1960 |
|---|---|---|---|---|---|---|
| Male | Middle | Number of Pop. | 142.02 | 142.86 | 268.33 | 417.34 |
| | | No. of Actual Seq. | 5 | 3 | 2 | 3 |
| | | Mean of Actual Seq. | 0.035 | 0.021 | 0.007 | 0.007 |
| | High | Number of Pop. | 165.28 | 242.83 | 482.14 | 685.63 |
| | | No. of Actual Seq. | 10 | 6 | 5 | 4 |
| | | Mean of Actual Seq. | 0.061 | 0.025 | 0.010 | 0.006 |
| | College | Number of Pop. | 117.08 | 157.44 | 238.26 | 217.72 |
| | | No. of Actual Seq. | 15 | 21 | 34 | 12 |
| | | Mean of Actual Seq. | 0.128 | 0.133 | 0.143 | 0.055 |
| Female | Middle | Number of Pop. | 68.69 | 188.72 | 359.42 | 431.96 |
| | | No. of Actual Seq. | 4 | 2 | 3 | 2 |
| | | Mean of Actual Seq. | 0.058 | 0.011 | 0.008 | 0.005 |
| | High | Number of Pop. | 53.89 | 138.17 | 380.23 | 630.12 |
| | | No. of Actual Seq. | 3 | 4 | 10 | 7 |
| | | Mean of Actual Seq. | 0.056 | 0.029 | 0.026 | 0.011 |
| | College | Number of Pop. | 18.11 | 53.24 | 104.64 | 116.37 |
| | | No. of Actual Seq. | 6 | 6 | 6 | 6 |
| | | Mean of Actual Seq. | 0.331 | 0.113 | 0.057 | 0.052 |

Source: EDUDAT

compared with those of middle and high school education. The lower level of MS in college education for birth cohort 1960 is partially attributed to the fact that not all of this cohort had completed their college education at the time of this survey. Except for the MS for birth cohort 1960, the MS by cohort shows a contrasting trend by sex. For males, the MS shows an increasing trend by birth cohort even though the difference of the MS is not so big as to be significant. On the other hand, for females, the MS decreases cohort after cohort. At this time, I am not sure what makes this contrasting trend of the MS by cohort for males and females. This will be discussed after the survival analysis.

The MS for college education is higher for males than for females. What makes this difference? There are two possibilities for this relatively higher MS for men of college education than for women. First, the possibility of various sequences of life events for men is related to the student selection system in colleges. Students apply to a college and take an entrance examination. The competition for entering colleges is very fierce in Korea. Less than half of the applicants every year are accepted by any kind of college in Korea. Some high school graduates who want to enter a prestigious college do not take the entrance examination to colleges which

belong to the secondary groups, after they fail the first examination for colleges belonging to the first groups.[10] Instead of attending a college in the secondary group, they prefer to spend an additional year preparing for the entrance examination to one of the first group schools. To experience the status of "repeater" preparing for the next year entrance examination is frequent in the Korean context. Males have been more likely to stay as "reapply" in private academies and reapply to colleges preparing for the entrance exam than females (Eun 1994). The first possibility of various sequences of life events for men of college education explains the occurrence of disorderly sequences during the transition period from high school to college.

The other possibility is partially understood by the fact that males in Korea usually go in the army after age 20. College students have two choices regarding the timing of their military service: during college years or after graduation from college. Military service does not matter in provoking various sequences of life events for those who serve in the military after graduation from college. On the other hand, those who serve in the military during college years are more likely to experience various types of sequences of life events because the timing of military service is not always consistent with the school calendar. It is frequent that Korean men waste time for several months or even a year before and after military service when the timing of the beginning of or the discharge from military service is in the middle of semester. These two possibilities contribute to increasing the number of actual sequences of life events during the transition period from high school to college and during college years for men.

From the analysis of the MS, it can be said that the process of schooling has been stabilized at middle and high school years. This is related to the increasing trend of enrollment at middle and high school. As enrollment increases, it becomes routine to finish middle and high schooling without interruption. Women of college education also experience the trend of stabilization. However, men of college education present an increasing trend in the MS. I cannot firmly explain this phenomenon with the currently

[10]Colleges are usually grouped in two, the first group and the secondary group. Applicants must choose only one college among the first group and take an entrance examination. If they fail in the first examination, they can apply to one of the secondary group. If they fail again, they enter a private academy and prepare for the next year's entrance examination or give up their hope of being a college student. The status of "repeater" can be repeated several times if men can postpone military service. There are Korean words indicating "repeaters": "chae-su" for the first time repeater, "sam-su" for the second time repeater, "sa-su" for the third time repeater, and so on.

available evidence, but remaining at private academies for one or more years after failing the first entrance exam to college, and military service before or during college education are thought to result in a greater MS for men than for women. One thing we must be aware of is that this increasing trend of the MS does not mean the beginning of the individualization of the life course as it is in current Western societies because there is no evidence that people come to have various choices besides schooling. The supply of the opportunities of college education has not met the demand of applicants pursuing college education as of 1983. Therefore, the unstable trend of the MS for men cannot be interpreted as a kind of individualization of the life course as in Western societies.

*Orderly/Disorderly Sequences of Life Events*

The stabilization of schooling is reexamined in terms of orderly/disorderly sequences. Various sequences of life events are grouped by the definition described above: orderly and disorderly sequences. The frequency analysis of orderly/disorderly sequences of life events may show somewhat similar results as the MS analysis. But the results of the two analyses are not necessarily the same. If many people experienced a specific type of disorderly sequence, the MS can be low but the percentage of disorderly sequence can be high. Table 4 shows the trend of orderly/disorderly sequences by sex, final education, and birth cohort.

Regardless of sex, an orderly sequence is a characteristic feature of the process of schooling during middle and high school years. About 95 percent of sequences of life events during middle and high school years were orderly except for birth cohort 1930. The percentage of orderly sequences during middle and high school years for birth cohort 1930 is also very high: more than 90 percent. To generalize this finding, middle and high school

**TABLE 4.** PERCENTAGE DISTRIBUTION OF ORDERLY SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING BY SEX, BIRTH COHORT AND FINAL EDUCATIONAL ATTAINMENT

| Sex | Final Education | Birth Cohort | | | |
|---|---|---|---|---|---|
| | | 1930 | 1940 | 1950 | 1960 |
| Male | Middle | 92.9 | 97.6 | 99.4 | 99.4 |
| | High | 90.8 | 94.9 | 95.8 | 97.3 |
| | College | 75.5 | 70.8 | 60.9 | 64.4 |
| Female | Middle | 93.1 | 99.8 | 99.5 | 99.5 |
| | High | 94.6 | 99.0 | 95.4 | 97.3 |
| | College | 70.2 | 92.3 | 86.2 | 74.8 |

education has become routinized and institutionalized in terms of the extent of interruptions by other activities such as employment. Those who are in the middle of middle school or high school education rarely take another status. With the increasing trend of higher educational attainment, Korean people are increasingly expected to routinize their education, especially until high school education in their teens without any interruptions in their schooling.

Turning our attention to people who were educated in a post-high school, we are confronted with very different features from those of middle and high school education. One feature is that the proportion of orderly sequences for those of college education drastically drops compared with people of middle and high school education. For men, the younger the cohort becomes, the more the percentage of orderly sequences drops. Once again, we should keep in mind that the percentage for birth cohort 1960 is likely to be underestimated because most of the respondents in this bracket did not complete their college education as of 1983. As for men, except for birth cohort 1930, the percentage of women with orderly sequences becomes lower as the cohort becomes younger.

Another feature is that the orderly/disorderly sequence analysis for college-educated women shows a contrasting feature with that of the MS analysis. In the MS analysis, women showed a lower MS as the cohort became younger, which was interpreted as reflecting the increasing stability in college education for women. The orderly/disorderly analysis in this section, however, reveals that stability of college education for women may be decreasing.

How can we explain this contrasting feature between the MS analysis and orderly/disorderly sequences for women of college education? To answer this question, I examined the types of actual sequences among people of college education. Surprisingly, I found that the percentage of an actual sequence, **SOS** for birth cohort 1960 was 17.2 percent, which is very high when compared with 2.1 and 3.5 percent for women of birth cohort 1940 and 1950, respectively. What is the content of **SOS**? Because the activity status **O** was not specified in detail in the coding system in the 1983 KNMS, I cannot say with confidence what it is. However, it is most likely that most cases with a sequence, **SOS**, indicate those who were once "repeaters" after graduation from high school in the Korean context. Because of the very competitive selection system along with the imbalance of demand and supply for the opportunity of college education, it is not unusual for high school graduates to try the entrance exam two or three times while remaining in a private academy. The recent trend of an increasing number

of female college students lets us know that there are also an increasing number of female "repeaters" at private academies. The result of increasing "repeaters" is reflected in the increasing trend of disorderly sequences of women of college education. Women are more likely to experience disorderly sequences during the transition from high school to college than during their college years because women have no possibility of interruption of their schooling by military service as in the case of men.

*Timing of the Beginning of Disorderly Sequences during Schooling*

How reliable is our explanation of the trend of orderly/disorderly sequences during schooling by the MS and the orderly/disorderly sequence analysis? One important finding from the analyses for men and women of college education is that disorderly sequences are likely to begin during the transition period from high school to college. The transition period from middle to high school did not seem to be critical in producing disorderly sequences. However, a sudden increase in the MS and drastic downturn in

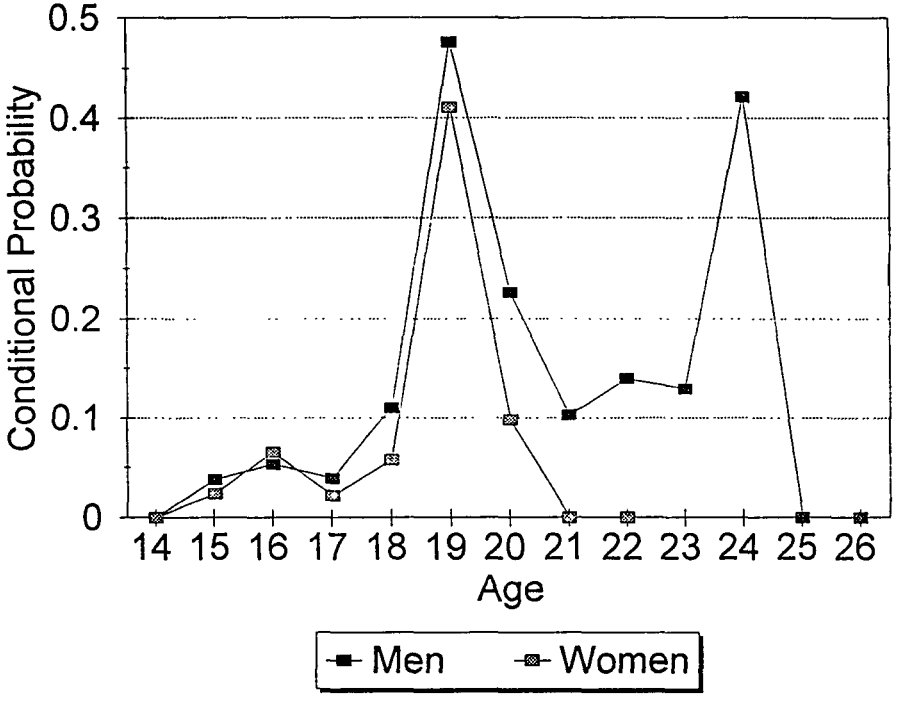


FIGURE 1. THE CONDITIONAL PROBABILITY OF THE BEGINNING OF DISORDERLY SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING BY SEX

orderly sequences for those of college education make us pay more attention to the transition period from high school to college as I argued above. In this section, I examine the conditional probability of falling into disorderly sequences and the survivor function of sequences remaining orderly until the last schooling using the life table method.

I begin to examine the timing of experiencing disorderly sequences by calculating the conditional probability. The conditional probability is the probability of the occurrence of an event at time *t*, given that the event did not happen at time *t*-1. The conditional probability in this section is the probability that a person deviates from "student" status to another activity status at age *t*, given that he or she was a student at age *t*-1. Figure 1 shows the conditional probability of falling into disorderly sequences at each age.

The conditional probability of falling into a non-student category increases from age 14 to age 16 for both men and women, and then it decreases at age 17. Age 16 represents the year of ending middle school and starting high school in Korea.[11] The increasing conditional probability of deviation from "student" status at age 16 is consistent with our assumption that the likelihood of belonging to a non-student category is highest when people graduate from each level of school, in this case middle school. At ages 17 and 18, the approximate conditional probability remains around between 0.1 and 0.2.

A remarkable increase in the conditional probability of the failure of being a student occurs at age 19. The conditional probability is 0.48 and 0.41 for males and females, respectively. Such high conditional probabilities at age 19 clearly reveal that this age is the turning point in the life course in Korea. Korean men and women usually graduate from high school at age 19. After graduation from high school, they can choose or are forced to choose one of several options: entering a college, getting a job, being unemployed, remaining as a "repeater" at a private academy, or serving in the military.

For women, the conditional probability decreases after age 19. This reflects that women are more likely to experience disorderly sequences during the transition period from high school to college than during college years. However, for men, the conditional probability fluctuates after age 19. This may be due to military service during college years. Men, like women, are likely to experience a disorderly sequence after graduation from high school. Unlike women, men are likely to experience interruptions in

[11]In Korea, it is mandatory to enter elementary school at age seven. Almost all children enter elementary schools at age seven. People enter middle school at age thirteen. At age sixteen, one enters high school, and college education begins at age nineteen if one successfully enters college without any failure in entrance examination

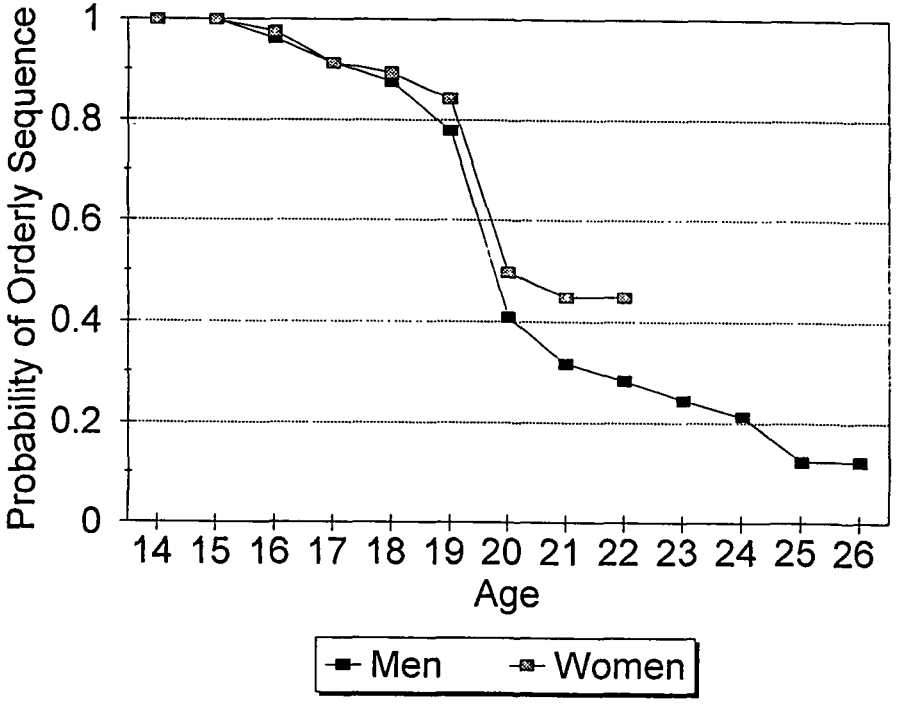


FIGURE 2. THE SURVIVOR FUNCTION OF ORDERLY SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING BY SEX.

schooling by conscriptive military service in their early twenties.

Another interest is how many people keep orderly sequences until the last schooling as time goes on. The survivor function provides us with the probability of maintaining orderly sequences by age. Figure 2 shows the survivor function indicating the probability of maintaining orderly sequences by age.

As we see from Figure 2, the survival curves drop considerably from age 16 to age 17, particularly for women. Again they remarkably drop from age 19 to age 20, and from age 20 to age 21.

The question from the MS analysis and orderly/disorderly sequence analysis about why a relatively high level of disorderly sequences appears for men and women of college education despite the stabilizing trend during middle and high school years is explained by the high conditional probability at ages 19 and 20. Nearly 50 percent of the survival changes for men and 40 percent for women from a student to a non-student status concentrated in these two ages. Interestingly, disorderly sequences of life events for the people of college education are likely to occur during the

transition period from high school to college for both men and women, and then during college years for men.

## THE CONSEQUENCES OF THE EDUCATIONAL PROCESS ON THE TIMING OF MARRIAGE

Korean men and women have experienced increasing disorderly sequences of life events after high school graduation. What are the consequences of the various sequences of life events until the last year of schooling on the timing of marriage? The effect of educational sequences on the timing of marriage or parenthood has not been researched widely. Rindfuss and his colleagues (1987) examined the effect of educational sequences on the timing of parenthood in the context of American society. Their conclusion was that those who continued post-high school education had lesser odds of becoming parents than those who never returned to school. Those who continued schooling without interruption after high school graduation were the least likely to become parents among those who had post-high school education. Educational sequences were related to the timing of parenthood in American society. Therefore, it is very meaningful to scrutinize whether there is an association between educational sequence and the timing of marriage or parenthood because on the one hand post-high school education has been increasing, and on the other hand, post-high school education is more frequently interrupted than the education below college level in Korea.

In this section, I examine the impact of educational sequences on the timing of marriage in the context of Korea. Because educational sequences until high school education in Korea have been increasingly orderly structured, I examine the impact of educational sequences on the timing of marriage only for those who attained at least some years of high school education. I classify educational sequences after high school by the following three types: no further education after high school; orderly schooling which was never interrupted during the transitional period from high school to college, and during college years; and disorderly schooling which experienced at least one interruption during the transition period from high school to college, or during college years. In the logit analysis, I recoded the "other" activity status to "unemployment". Since the majority of Korean men and women graduate from high school at age 19, I conduct the logit analyses for those whose age was 20 or more in 1983. Table 5 shows the impact of educational sequences on the timing of marriage for Korean men who attained high school education or post-high school education.

**TABLE 5.** THE CONSEQUENCES OF SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING ON THE TIMING OF MARRIAGE: MEN

| Variables | Age 20-23 | Age 24-25 | Age 26-27 | Age 28 + |
|---|---|---|---|---|
| | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) |
| Intercept | -2.0234(.2136)** | -1.5951(.2219)** | -1.4469(.2066)** | -1.2302(.1743)** |
| Birth Cohort | | | | |
| -1939 | Reference | Reference | Reference | Reference |
| 1940 - 1949 | -1.3482(.2246)** | -0.5604(.2165)** | -0.0060(.1909) | 0.3077(.1534)* |
| 1950 - 1959 | -1.4521(.1929)** | -0.3622(.1911)** | 0.2403(.1858) | 0.3434(.1707)* |
| 1960 - | -1.7634(.3540)** | N.A. | N.A. | N.A. |
| Place of Birth | | | | |
| Urban | Reference | Reference | Reference | Reference |
| Rural | 0.0180(.2326) | 0.0149(.2103) | 0.4051(.1689)* | 0.2136(.1624) |
| Residence at 14 | | | | |
| Urban | Reference | Reference | Reference | Reference |
| Rural | 0.2321(.2158) | 0.3838(.1988)+ | -0.1094(.1637) | 0.0739(.1624) |
| Activity Status at t-1 | | | | |
| Employed | Reference | Reference | Reference | Reference |
| Student | -0.7316(.3003)* | -0.4082(.3288) | -0.5808(.2839)* | -0.7649(.4976) |
| Military Serv. | -0.5808(.2080)** | -0.7812(.1668)** | -0.2242(.1764) | -0.2759(.2647) |
| Unemployed | -0.6538(.2548)* | -0.2328(.2657) | 0.1587(.2134) | - 0.2028(.2470) |
| Sequences of Life Events[1] | | | | |
| No More Educ. | Reference | Reference | Reference | Reference |
| Orderly Seq. | -0.7120(.2731)** | - 0.3858(.2018)+ | - 0.1081(.1528) | - 0.0114(.1382) |
| Interrupted | -1.5842(.5374)** | - 0.6989(.2891)* | -0.6931(.2426)** | -0.0202(.1832) |
| -2 Log L | 116.066 | 59.715 | 34.797 | 12.502 |
| DF | 10 | 9 | 9 | 9 |
| Total Number Event | 6107.97 160.48 | 2303.36 219.72 | 1551.53 328.54 | 1354.65 392.13 |

** Significant at 0.01 level
* Significant at 0.05 level
+ Significant at 0.1 level
Note: 1. Educational sequence until time t-2.

The logit model in Table 5 includes background variables, activity states at time *t*-1 and an educational sequence until time *t*-2. I focus on the effect of educational sequence on the timing of marriage. Men who have an orderly educational sequence have lesser odds of getting married in every age group than those who did not return to school after high school graduation.

**TABLE 6.** THE CONSEQUENCES OF SEQUENCES OF LIFE EVENTS UNTIL THE LAST YEAR OF SCHOOLING ON THE TIMING OF MARRIAGE: WOMEN

| Variables | Age 20-21 | Age 22-23 | Age 24-25 | Age 26+ |
|---|---|---|---|---|
| | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) |
| Intercept | -1.5399(.3147)** | -1.7043(.3208)** | -1.3531(.3375)** | -1.5215(.3543)** |
| Birth Cohort | | | | |
| - 1939 | Reference | Reference | Reference | Reference |
| 1940 - 1949 | -1.0168(.3426)** | -0.2611(.3316) | 0.1286(.3414) | 0.4320(.3503) |
| 1950 - 1959 | -1.1396(.3031)** | -0.1510(.3071) | -0.0827(.3246) | 0.1491(.3404) |
| 1960 - | -1.1924(.3467)** | -0.5988(.3942) | N.A. | N.A. |
| Place of Birth | | | | |
| Urban | Reference | Reference | Reference | Reference |
| Rural | -0.0970(.2831) | 0.1729(.2181) | 0.2795(.2343) | 0.3542(.2591) |
| Residence at 14 | | | | |
| Urban | Reference | Reference | Reference | Reference |
| Rural | -0.0114(.2910) | -0.1952(.2271) | -0.2752(.2411) | -0.0957(.2870) |
| Activity Status at t-1 | | | | |
| Employed | Reference | Reference | Reference | Reference |
| Student | -0.9332(.4311)* | 0.0193(.3533) | -0.3732(.5701) | -0.1734(.8523) |
| Homemaker | 0.6932(.4674) | 0.6570(.3492) | 0.3333(.3702) | 0.8260(.5137) |
| Unemployed | 0.2853(.2160) | 0.4453(.1769)* | 0.2597(.1815) | 0.2211(.2123) |
| Sequences of Life Events[1] | | | | |
| No More Educ. | Reference | Reference | Reference | Reference |
| Orderly Seq. | -0.5446(.4288) | -0.3147(.2837) | - 0.0862(.2102) | 0.3733(.2313) |
| Interrupted | - 2.1675(1.4301) | -1.0278(.5568)+ | -0.4010(.4473) | -0.4310(.4933) |
| -2Log L | 49.170 | 23.666 | 17.273 | 12.654 |
| DF | 10 | 10 | 9 | 9 |
| Total Number | 1900.78 | 1368.71 | 766.81 | 528.58 |
| Event | 114.82 | 191.08 | 196.04 | 143.27 |

** Significant at 0.01 level

* Significant at 0.05 level

+ Significant at 0.1 level

Note: 1. Educational sequence until time t-2.

The negative log-odds of getting married for men who maintained orderly educational sequences decrease as age goes up. For men of age 28 or more, the effect of orderly educational sequences on the odds of getting married nearly disappears when compared with those who did not pursue further education beyond high school.

Men who experienced a disorderly sequence in educational process also

have lesser odds of getting married than men who did not study any more after high school graduation. Until age 27, the effect of interrupted schooling after high school graduation is statistically significant and very substantial. As age increases, the effect of interrupted schooling also decreases as the effect of orderly educational process does. Men who underwent interrupted schooling show lesser odds of getting married than men who maintained an orderly educational sequence when compared with men who did not continue post-high school education.

We find a similar effect of orderly educational sequence and interrupted schooling on the timing of marriage for women from Table 6. Women who had post-high school education were less likely to marry than women who did not continue post-high school education regardless of orderly/disorderly educational sequence. The negative effects of orderly educational sequences and interrupted schooling on the odds of getting married diminish as age increases. Women who experienced interrupted post-high schooling showed lesser odds of getting married than women who kept their educational sequence orderly when compared with women who did not pursue post-high school education.

The explanatory power of the model, however, becomes weak as age goes up. For women of age 28 or more, the likelihood ratio Chi-square of the model is not significant at the 0.05 level. Except for a very weakly significant coefficient, the coefficients of the model are not statistically significant for women.

## SUMMARY AND DISCUSSION

Understanding the timing and sequences of life events is requisite for life course study. In this study, I examined the sequences of life events until the last schooling by sex and final educational attainment.

I examined the number of actual sequences of life events until the last schooling. To do this, I calculated the mean of actual sequences of life events (MS). Regardless of sex, the MS in middle and high school years presented a decreasing trend cohort after cohort. This was interpreted as evidence of the stabilization during middle and high schooling. Middle and high school education has become a mass experience in Korea. The increasing educational enrollment in middle and high schools is interpreted as producing the decreasing trend of the MS at middle and high school. However, I did not find a decreasing trend of the MS for those of college education. I explained the increasing trend of the MS for men and women of college education by the instability during the transition period from high

school to college.

As another way of description, I analyzed the frequency distribution of orderly/disorderly sequences by sex and education. The result of this analysis was very similar to that of the MS. However, I found the difference between the MS analysis and the frequency analysis of orderly/disorderly sequences for women of college education. After examining the actual sequences until the last schooling, I found that a particular sequence, **SOS**, increased very significantly among the recent cohort of women with college education. This shows that it is more likely for men and women to fall into disorderly sequences in the transition period from high school to college.

In order to examine when disorderly sequences are likely to occur, I adopted the survival analysis. The conditional probability analysis clearly showed that two transition periods, from middle to high school and from high school to college, were the critical timing for disorderly sequences to occur. The survivor function for both sexes showed that during age 19-20 both sexes underwent a drastic decline in orderly sequences. This implies that disorderly sequences of life events were likely to begin during the transition period from high school to college for both men and women in Korea. Men risked disorderly sequences of life events during college years. Unlike men, women's college years were hardly interrupted.

Korean men and women have stabilized their education until middle and high school. In terms of the number of sequences of life events until the last year of schooling and orderly/disorderly sequences of life events, people have institutionalized middle and high school education in their life course.

However, many people experience a discontinuity in their education during the transition period from high school to college. From the demand side, Koreans are known to have "kyoyukyol" (high zeal for education) (Chong 1986). In a society where natural resources are scarce and manpower is the only sufficient resource in economic development, Koreans have pursued higher education as a means of success in their lives: "The institutionalization of a close coupling between college education and employment and the absence of the class-based educational system in Korea spurred social demands for higher education" (Jeong 1992, p. 113). From the supply side, the Korean government allowed and encouraged people to have middle and high school education for economic development. The supply of college education, however, has been under the tight control of the Korean government. There was an oversupply of highly educated manpower in the 1950s because the Korean government exempted or postponed military service for college students. In the 1960s and 1970s, the Korean government regulated the quota of freshmen at each college. The

college enrollment ratio remained less than 10 percent of the age cohorts. This conflict between demand and supply sides of college education led many high school graduates to experience a discontinuity in their education. Some of them prepared for entrance examination at private academies without any guarantee to enter a college the next year. Some were forced to serve in the military. Some were employed even though they wished to study further. With increasing educational attainment by women, women "repeaters" also increased in recent years. As a result of the imbalance between demand side by the people and supply side by the government, Korean men and women increasingly experienced discontinuities in their education during the transition period from high school to college.

The duty to serve in the military also has the effect of interrupting college education for men. Men of high school education or below cannot choose the timing of their military service. Because military service begins at age 20 for all Korean men if they are not college students, high school graduates face a very unstable period after high school graduation, which usually comes at age 19. If a Korean man fails twice in the entrance examination, he is likely to begin the three-year military service. The maintenance of the "repeater" status is not easy because of military service.

College students can postpone their military service until after their graduation. Most college students complete the military service during college years. The beginning of and discharge from military service are absolutely up to the government administration. Thus, the timing of completing military service does not always match the timing of resuming college education. The discrepancy between the two timings can lead to a period of discontinuity in college education.

The results of the orderly/disorderly sequence analysis and the conditional probability analysis show that the unique situation in Korea argued above has brought about the relatively high disorderly sequences of life events during the transition period from high school to college for both men and women, and during college years for men. The sequences of life events until the last year of schooling clearly show that individual life courses in Korea have been consistently affected by the conditions between individual aspiration for further education and external forces such as regulation of college education by the state and a very inflexible military service. This proves that the life course is a social construction as well as a result of the choice of opportunities by individuals.

I examined the consequences of educational sequences on the timing of marriage. The impact of the educational sequence was significant for men.

Until age 27, men who had interrupted post-high schooling had lesser odds of getting married than men who did not continue post-high school education. The coefficients of the model were significant. After age 27, the impact of the educational sequence became negligible. Also, men experiencing disorderly sequences of education had lesser odds of getting married than men who maintained an orderly sequence of education. For women, I found the effects of education to be similar to those for men: as age increases, the negative effects of orderly educational sequences and interrupted post-high schooling on the timing of marriage diminish. Women who experienced interrupted schooling showed lesser odds of getting married than women who kept their post-high school education orderly when compared with women who did not continue post-high school education. However, almost all coefficients of the model were not statistically significant for women.

We should be very cautious in interpreting the impact of the educational sequence on the timing of marriage. The educational sequence does not represent sequences of life events until marriage. It is somewhat true that educational sequences cannot entirely explain the timing of marriage because an educational sequence is a part of a sequence of life events until marriage. It is more appropriate to interpret that educational sequence as a part of sequences of life events until marriage to some extent matters in the timing of marriage, but the impact of educational sequence decreases as age increases in Korea.

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